

Explanation of Amendments to the Drawings

The attached 2 sheets of drawings include changes to Fig. 2 and Fig. 3. These sheets, which include Figs 1-2 and Figs. 3-5 respectively, replace the original sheets including Figs. 1-2 and Figs. 3-5. No changes have been made to Figs. 1 and 4-5.

In Fig. 2, element X has been identified.

In Fig. 3, element Y has been identified.

Attachment:                    Replacement Drawing Sheets (2)  
                                 Annotated Drawing Sheets Showing Changes

REMARKS

The Office Action of April 11, 2007, and the prior art cited and relied upon therein have been carefully studied. The claims in the application are now claims 1-9, and these claims define patentable subject matter warranting their allowance. Favorable reconsideration and such allowance are respectfully urged.

New claims 7-9 have been added. Claims 1-9 remain in the application for consideration.

Applicant does not understand and, therefore, traverses the Examiner's indication that the December 26, 2006 "Declaration" and pictures submitted with Applicant's January 18, 2007 response

"...is insufficient to overcome the rejection of claims 1-6 based upon 35 U.S.C. §103(a) as set forth in the last Office Action." (Page 2, lines 11-13 of the Examiner's July 11, 2007 Office Action).

This statement is inconsistent with Applicant's stated reasons for submitting the declaration. Applicant clearly submitted the declaration for the purpose of overcoming her 35 U.S.C. §112, first paragraph rejection and her objection to the drawings (see line 9, page 7 through line 17, page 8 of Applicant's response). There is no indication within Applicant's remarks indicating that the declaration was

submitted to overcome the Examiner's 35 U.S.C. §103(a) rejection. The Examiner's 35 U.S.C. §301a) rejection was handled separately with no reference to the declaration.

Further, there is no statement in the declaration as maintained by the Examiner that "it (the declaration) states that the claimed subject matter solved a problem that was long standing in the art". The declaration is clearly limited to identifying a problem confronting the inventors, describing the course of realizing and solving that problem, and providing photos of the resulting product. Accordingly, the Examiner's disposal of the inventor's declaration on the basis that it did not solve "a problem that was long standing in the art" under MPEP 716.04 is incorrect and non-responsive to Applicant's submission of the declaration. If the Examiner wishes to maintain her position under MPEP 716.04, Applicant requests the specific basis for its application.

As best understood, if the Examiner's comments have any relevance, it appears that they should have been included in her 35 U.S.C. §112, first and second paragraph rejections or the objections to the specification and drawings.

Accordingly, Applicant further traverses the Examiner's current portion of the 35 U.S.C. §112, first and second paragraph rejections and objection to the specification

and drawings regarding the "non-cutting sides" of the claimed invention based on Applicant's December 26, 2006, declaration incorporated herein by reference.

(1) The Examiner maintains that,

"The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the art that the invention(s), at the time the application was filed, had possession of the claimed invention."

Applicant does not agree. The Examiner's rejection is limited to whether the claimed broach can cut the flanks 15,16 in the shape shown in Fig. 3. The claimed invention is directed solely to the structural elements of an internal broach. The broach is clearly not claimed in combination with the bottom and flanks (15, 16) of the final work piece which are referenced only inferentially and are not part of the "claimed invention". Applicant submits that the making of the claimed broach has been clearly conveyed to the skilled artisan absent any showing otherwise by the Examiner.

The Examiner's description of the shape of the flanks (15, 16) of the workpiece as being "smooth" or "radiused shape" is the Examiner's description of the flanks (15, 16) shown in Fig. 3 and are not found anywhere in the

application. There is nothing whatever in either the specification or claims maintaining that the flanks (15, 16) are "smooth" or "radiused shape" as repeatedly maintained by the Examiner. The depiction of flanks 15,16 in Fig. 3 is merely Applicant's observation of the shape of the workpiece made by the claimed broach as evidenced by the declaration pictures. Applicant has made no claim that the flanks 15,16 are smooth as defined by the Examiner and are clearly not "radiused". Applicant is further unaware of any law or regulation requiring an exact showing of every aberration created in the end product produced by the claimed broach, i.e. staggered sides as suggested by the Examiner.

Further, claim 1 does not indicate that "no material is being removed from the sides" as maintained by the Examiner. Indeed, the specification and the drawings clearly disclose the removal of material from the sides of the workpiece.

Lines 16-17 on page 6 of the specification as well as other parts of the disclosure make clear:

"Broaching takes place exclusively by means of the bottom cutting blades."

As shown in the drawings, "chip 30" extends between the flanks 15, 16 and makes clear that material is removed by the bottom blades over the full width of the final profile and

from the sides up to a height distance equal to pitch a. If the Examiner disagrees, Applicant requests the basis for the Examiner's conclusion, including the specific language in the claims that "no material is removed from the sides".

Applicants again submits that the profile flanks of the picture samples enclosed with the declaration were broached with an internal broach having broach cutting teeth according to claim 1 of the invention. A non-staggered side flank is produced at the sides of the broach cutting teeth exclusively via the successive bottom cutting blades. Successive cutting blades differ in depth only a few micrometers. Therefore, each successive bottom cutting blade cuts a step at the corner formed between this bottom cutting blade and the sides of the broach cutting teeth, this step having a height according to the pitch of successive broach cutting teeth and according to the difference in the width of the bottom cutting blades of successive cutting teeth. These steps each cut successive portions adjacent to each other on a micrometer scale and give the appearance of a non-staggered broached side flanks.

Fig. 3 clearly shows that "pitch a" is the distance between cutting blades.

Accordingly, the only reasonable measurement of chip 30 corresponding to pitch a is the depth of chip 30. This is supported by lines 10-13 on page 11 which indicates that:

"The chip 30, and thus also the flank 15, is framed in the vicinity of the pitch a, it being stressed again that the cutting operation takes place over the full width b."

The width of the cutting blades is clearly shown to extend between flanks 15, 16. Accordingly, the artisan skilled in the art would understand from the above that each chip which is cut progressively increases the height of profile 12 by not only removing the material of work piece 8 above each cutting blade but a portion of the material of work piece 8 needed to form the entirety of flanks (15, 16) up to a height of at least pitch a.

Page 10, lines 20-21 indicate that:

"The pitch a is in the range of 10 to 80mm." (emphasis added)

10 to 80 micrometers are extremely small distances which cannot be reflected in the drawing figures which are provided merely as a means of understanding the specification and not as an engineering dimension of the finished workpiece which is not part of the claimed invention. Given the small distance between cutting blades and the fact that the length of successive cutting blades is shown to diminish as the

broach moves through the work piece, it is absolutely clear that Applicant can adjust the pitch a and the length of the cutting blades in a manner to produce the form of flanges 15, 16 as shown in Fig. 3.

The single reason presented by the Examiner (other than maintaining that the Applicant had not met the test of MPEP 716.04 which Applicant had not presented as an argument for acceptance of its declaration) is found in the first paragraph, page 3 of the Examiner's Office Action, as follows:

"The pictures submitted do not show a staggered broached side flanks, however that does not prove that the process used to cut said profile does not used teeth with one cutting edge and another opposing guiding edge (with no cutting ability). (Misspellings are the Examiner's.)

Furthermore, the declaration does not give details of how sides could have that smooth radiused shape when according to the claim and declaration, no material is being removed from the sides."  
(Emphasis by the Examiner)

Applicant submits that the first sentence is not responsive to Applicant's declaration, and the reasons Applicant has separately presented previously and above defending the accuracy of the depiction of flanks (15, 16) in the drawings under MPEP 2163.04 cited below.



**2163.04      Burden on the Examiner with  
                  Regard to the Written Descrip-  
                  tion Requirement**

The inquiry into whether the description requirement is met must be determined on a case-by-case basis and is a question of fact. *In re Wertheim*, 541 F.2d 257, 262, 191 USPQ 90, 96 (CCPA 1976). A description as filed is presumed to be adequate, unless or until sufficient evidence or reasoning to the contrary has been presented by the examiner to rebut the presumption. See, e.g., *In re Marzocchi*, 439 F.2d 220, 224, 169 USPQ 367, 370 (CCPA 1971). The examiner, therefore, must have a reasonable basis to challenge the adequacy of the written description. The examiner has the initial burden of presenting by a preponderance of evidence why a person skilled in the art would not recognize in an applicant's disclosure a description of the invention defined by the claims. *Wertheim*, 541 F.2d at 263, 191 USPQ at 97. (emphasis added)

*In re Marzocchi*, cited in MPEP 2163.04 indicates that,

"...it is incumbent upon the Patent Office, whenever a rejection on this basis (the truth) is made, to explain why it doubts the truth or accuracy of any statement in a supporting disclosure and to back up assertions of its own with acceptable evidence or reasoning which is inconsistent with the contested statement. Otherwise, there would be no need for the applicant to go to the trouble and expense of supporting his presumptively accurate disclosure."

Applicant submits that given that the description as filed "is presumed to be adequate", the Examiner has entirely

failed to present "sufficient evidence or reasoning to the contrary ... to rebut the presumption".

The Examiner provides no evidence or reasoning rebutting the truth of Applicant's position. It merely challenges the accuracy of Applicant's photos as explained above by suggesting that the result shown could have been achieved by another method. Applicant submits that the Examiner's position suggests that Applicant has misrepresented the accuracy of its disclosure under oath. This challenge clearly does not meet the requirements of MPEP 2163.04 to directly rebut the Applicant's reason for supporting the accuracy of its drawings.

With regard to the portion of the Examiner's 35 U.S.C. §112, first and second paragraph rejections and objection to the specification directed to "a bottom cutting blade", Applicant notes as indicated on page 10, lines 5-8 that:

"The broach cutting teeth 21a to 21f each have a bottom cutting blade 23a to 23f... which extends in the course of a circle that is concentric of axis 11." (emphasis added)

To further establish the meaning of this sentence, Applicant has added thereafter on line 8 the following sentence, the basis of which is clearly shown in Fig. 2:

"For example, Fig. 2 shows cutting blade 23f extending as an arc of circle X whereas remaining blades 23a-e are arcs of circles below circle X which are not shown."

Applicant respectfully submits that the Examiner's indication that the declaration is insufficient to overcome the rejection of claims 1-6 under 35 U.S.C. §103(a), objection to the drawings and specification, and rejection of claim 1 under 35 U.S.C. §112, first and second paragraphs have been overcome on the basis of the Examiner's failure to meet the requirements of MPEP 2163.04 in rebutting the presumed adequacy of Applicant's disclosure with evidence or reasoning to the contrary. Clearly, the Examiner's statement challenging the veracity of Applicant's declaration is not equivalent to providing evidence or a reasonable explanation why Applicant's response to the Examiner's challenge of the shape of flanks 15,16 in Fig. 3 is inaccurate.

Applicant has indicated in some detail why it is "clear from the specification and drawings how a broach cutting teeth that cuts only on its bottom side and having non-cutting sides could, while having a shape as shown in Fig. 3, form profiles 15 and 16."

There is nothing in the specification, drawings or claims that indicates that the teeth cut only on a bottom

side, or that on profiles 15 and 16 are necessarily smooth. These are the Examiner's conclusions unsupported by the application. Indeed, the specification and previous and above response make it clear that the claimed cutting blades cut a chip 30 to a depth of pitch a over the full length of the tooth clearly removing material from the bottom and a portion of the side flanks (15, 16) to at least the depth of pitch a. Since depth of chip 30 is extremely small, the flanks (15, 16) appear as shown in Fig. 3. The Examiner has failed to provide as required by MPEP sufficient evidence or reasoning contrary to the presumed adequacy of Applicant's explanation and has provided no explanation why the artisan skilled in the art would be unable to produce the claimed broach.

Applicant requests that the Examiner provide the required rebuttal of Applicant's response or withdraw her 35 U.S.C. §112, first and second paragraph rejections and objection to the specification and drawings.

The Examiner has further rejected claims, as best understood, under 35 U.S.C. §103(a) as being unpatentable over Psenka '919 in view of Applicant's Admitted Prior Art (AAPA). Applicant traverses this rejection as applied to the claims as amended and new claims 7-9.

Applicant's claimed broach provides cutting teeth 23a to 23f each of which extends as an arc of a circle which cuts a chip (30) over the full final profile width (6) which in total cuts the final bottom (14) and final profile flanks (15,16) of the serrations in the workpiece (8). Broaching of the bottom and profile flanks of the serrations takes place exclusively by means of the claimed bottom cutting blades, as explained in detail in the specification and above. As such, independent claims 1, 8 and 9 each provide that all of the side edges of each of the cutting teeth are "without a cutting ability to form the final allocated profile flanks (15,16).

In comparison, the cutting teeth of Psenka's broach are formed in two groups, wherein the first group has blades designed to cut slots in the workpiece which are of less width than the final desired width of slot or tooth space (see Col. 2, lines 44-46 and teeth A-C in Fig. 4). As such, all of Psenka bottom cutting blades do not cut "a full final profile width (b)" as claimed. Also, the feature that all the claimed cutting blades extend as "an arc of a circle" clearly distinguishes a different form of cutting blades than that of Psenka where there is a step, i.e. 74 in Fig. 5 in the cutting blade shown in Fig. 5.

Further, there is nothing whatever in Psenka establishing that all the sides of either the first or second groups "are without a cutting ability to form the allocated profile" as claimed. Throughout Psenka, it is indicated that the "teeth" of both the first and second teeth groups "remove metal" from identified spaces without any indication that the sides of these teeth "are without cutting ability" (see Col. 3, lines 45-61 and 67-75 of Psenka). Psenka eliminates the possibility that all the sides are "without cutting ability" by indicating that certain teeth do have sides that have an "obtuse angled cutting edge". Applicant submits that all the Psenka teeth appear to include this "obtuse angled cutting edge" on one of their sides (see Col. 4, lines 39-43, Fig. 2 and Col. 2, lines 53-56 of Psenka).

In addition to the above clear structural differences, there is no teaching whatever in Psenka of all of the sides of each of the cutting teeth on one side of Psenka teeth lying within "the same curved plane", as the sides of Psenka teeth A-C lie outside of the curved planes 52 and 54 as shown in Fig. 54.

Further, there is no teaching whatever in Psenka of all of the sides of each of Psenka teeth having "relieved surfaces" which do not touch the profiled flank they face each

extending "in its own curved plane", as all the teeth above teeth A-C extend in the same curved plane 40 or 54. These teeth also "touch" the profiled flank as they are part of group 2 which provide the guiding and cutting action for the remainder of the broach (see Col. 3, lines 1-13 of Psenka).

The Examiner's comments regarding "cutting teeth (E-G)" with reference to Col. 4, lines 10-12 is inaccurate and is not understandable. Col. 4, lines 10-12 makes no reference to cutting teeth (E-G). The remarks that follow the Examiner's comments appear to be directed to Fig. 5, a cross-section through the Psenka broach which are clearly limited to a discussion of the second tooth of the second group that removes the space F shown in Fig. 4. As such, space F is limited to the space previously removed by teeth A-C and further removed by teeth E-F. Tooth G (part of the second group) is not involved.

As such, the teaching the Examiner is alluding to is not comprehensible, but under any circumstance fails to teach structural equivalents to that claimed.

Finally, Applicant points out that if the Examiner agrees that "the teeth of the second series cut primarily with their tops" as stated, then she must also agree that Fig. 3 of the application is accurate as it shows the same tooth space

intended by tooth space 30 in Fig. 3 of Psenka. However, the statement does not teach that broaching takes place exclusively by means of the Psenka cutting teeth for the reasons stated above.

New claim 8 is a combination of the features of claim 1 and previously presented claim 3.

In Fig. 1, Psenka shows broach cutting teeth which, successive counter to the direction of broaching, are disposed in rows that are helical to a central longitudinal broach axis. Fig. 1 does not show broach cutting teeth being disposed in rows which are parallel to the central longitudinal broach axis.

The helical rows of successive broach cutting teeth according to Psenka are necessary to hinder displacement of the broach axis during broaching as this helical arrangement supports the guiding mechanism of Psenka's broach cutting teeth. Such a helical arrangement is costly to manufacture.

In contrast to that, according to new claim 8, broach cutting teeth according to the invention disposed in rows being parallel to the central longitudinal axis are possible. Thus, new claim 7 is patentable over Psenka and over the other prior art.

New claim 9 is a combination of the features of claim 1 and previously presented claim 4.



Regarding the feature of successive broach cutting teeth being disposed in rows which are parallel to the central longitudinal axis, it is referred to the arguments given above with respect to new claim 7. In addition, Psenka does not show broach cutting teeth which, side by side relative to the direction of broaching, are disposed such that with respect to the central longitudinal axis helically extending chip spaces are arranged. Such an arrangement demonstratively is shown in Fig. 6 of the present application. Such a helical side by side arrangement helps to improve the guiding action as is stated in the original specification, page 12, lines 11 to 13.

Thus, new claim 9 is patentable over Psenka and over the other cited prior art.

Applicant submits that the claimed broach patentably defines over the cited prior art based on the substantial structural differences cited above and therefore cannot function in the same manner as the claimed broach.

The evident difficulties of the examiner to retrace the broaching process done with the internal broach according to the invention shows that this invention was not obvious for other experts working on the problem to avoid displacement of the broach axis and to establish an accurate guiding action.

Again it is confirmed that the profile flanks of the picture samples enclosed with the declaration were broached

with an internal broach having broach cutting teeth according to claim 1 of the invention. Successive cutting blades differ in depth only a few micrometers. Therefore, each successive bottom cutting blade cuts a step at the corner formed between this bottom cutting blade and the sides of the broach cutting teeth, this step having a height according to the pitch of successive broach cutting teeth and according to the difference in the width of the bottom cutting blades of successive cutting teeth. These steps each cut by successive corners are adjacent to each other on a micrometer scale and give the appearance of a non-staggered broached side flank.

Page 1 of the Office Action states that this Action is non-final. Page 11 states that this Action is made final. A final rejection is clearly unsupportable in light of the Examiner's February 20, 2007 advisory action that required Applicant's filing of a Request for Continued Examination in light of the Examiner's indication that "independent claim 1 includes limitations that raise new issues that require searching." The Examiner's refusal to examine the amended claims precludes a final office action under the MPEP on a first office action under a RCE.

Further, Applicant submits that if the application is not allowed based on this response, a final office action

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is also not justifiable on the basis of the Examiner's failure to respond to arguments identified above made in Applicant's January 18, 2007 response.

Favorable reconsideration and allowance are earnestly solicited.

Respectfully submitted,

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